

Simplify and state the restrictions.

$$a) \frac{4}{x-2} - \frac{1}{x-2} =$$

$$= \frac{4-1}{x-2}$$

$$= \frac{3}{x-2}, \quad x \neq 2$$

$$x(x-2) \quad x(x-1)$$

$$b) \frac{x}{x-1} + \frac{3x}{x-2}$$

$$CD = (x-1)(x-2)$$

$$\text{Restriction} \Rightarrow x-1 \neq 0 \quad \text{and} \quad x-2 \neq 0$$

$$= \frac{\overset{x \neq 1}{x(x-2)} + \overset{x \neq 2}{3x(x-1)}}{(x-1)(x-2)}$$

$$= \frac{1}{(x-1)(x-2)} \times (x(x-2) + 3x(x-1))$$

$$= \frac{\overset{x}{x^2} - 2x + \overset{x}{3x^2} - 3x}{(x-1)(x-2)}$$

$$= \frac{4x^2 - 5x}{(x-1)(x-2)} = \frac{x \cdot (4x-5)}{(x-1)(x-2)}, \quad x \neq 1, \quad x \neq 2$$

$$c) \frac{x}{3x-6} - \frac{3}{2x-4} = \frac{x^2}{3(x-2)} - \frac{3^3}{2(x-2)}$$

CD of $3A$ and $2A \rightarrow 6A$

$$CD = 6(x-2) \text{ so } x-2 \neq 0 \rightarrow x \neq 2$$

$$= \frac{2x-9}{6(x-2)}, \quad x \neq 2$$

$$d) \frac{x(x+1)}{2x^2-7x+6} - \frac{x(x-2)}{2x^2-x+3}$$

$$2x^2 - 7x + 6 \quad \text{HT so } ac = 2 \times 6 = 12 \rightarrow (-4) \times (-3)$$

$$= 2x^2 - 4x - 3x + 6 \quad b = -7$$

$$= 2x(x-2) - 3(x-2)$$

$$= (x-2)(2x-3) \rightarrow \text{Denominator of first fraction}$$

$$2x^2 - x - 3 \quad \text{HT so } ac = 2 \times (-3) = -6 \rightarrow (-3) \times 2$$

$$= 2x^2 - 3x + 2x - 3 \quad b = -1$$

$$= 2x(x+1) - 3(x+1)$$

$$= (x+1)(2x-3) \rightarrow \text{Denominator of second fraction} \quad \therefore CD = (x-2)(2x-3)(x+1)$$

$$d) \frac{(x+1)^2 - (x-2)(x-3)}{(x-2)(2x-3)(x+1)} = \frac{\cancel{x^2} + 1 + 2x - \cancel{x^2} - 2x - 3x + 6}{(x-2)(2x-3)(x+1)}$$

$$= \frac{-3x+7}{(x-2)(2x-3)(x+1)}, \quad x \neq 2, \frac{3}{2}, -1$$

Homework: pg. 94 #8, 9, 11, 17, 19, 20*